

Default operator:  ☒ Highlight all hit terms initially

(cameras with synthesis\$5) and (virtual\$3 same  
 (coordinat\$4 or point\$3 or position\$3))

1/9/64

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 [Image](#)
 [Text](#)
 [HTML](#)

DOCUMENT-IDENTIFIER: US 20030085999 A1

TITLE: Vehicle surroundings monitoring system for adjusting the same

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## Abstract Paragraph - ABTX (1):

The invention provides a vehicle surroundings monitoring system for synthesizing and displaying images captured by a plurality of cameras to provide images that, near the border between partial images, are more accurate and more readily understood by the user than has been the case conventionally. In the synthesized image, a partial image captured by a first camera and a partial image captured by a second camera are adjacent to one another at their border. Near this border, the capturing directions of the first and the second cameras both substantially match the direction of the border. Consequently, images of objects near the border extend along the border, and thus do not disappear on the synthesized image.

Details Text Image HTML KWIC

	Document I	Kind Code	Source	Issue D	Pages
1	US 2003023		US-PGP	2003122	25
2	US 2003021		US-PGP	2003112	18
3	US 2003021		US-PGP	2003111	39
4	US 2003019		US-PGP	2003102	19
5	US 2003017		US-PGP	2003092	14
6	US 2003015		US-PGP	2003082	13
7	US 2003014		US-PGP	2003073	39
8	US 2003013		US-PGP	2003072	17
9	US 2003013		US-PGP	2003071	28
10	US 2003013		US-PGP	2003071	7
11	US 2003010		US-PGP	2003061	28
12	US 2003010		US-PGP	2003061	35
13	US 2003010		US-PGP	2003052	9
14	US 2003009		US-PGP	2003052	8
15	US 2003008		US-PGP	2003050	36
16	US 2003007		US-PGP	2003042	67
17	US 2003006		US-PGP	2003040	18
18	US 2003005		US-PGP	2003032	16

Details Text Image HTML



US 20030085999A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2003/0085999 A1  
Okamoto et al. (43) Pub. Date: May 8, 2003

(54) VEHICLE SURROUNDINGS MONITORING SYSTEM AND METHOD FOR ADJUSTING THE SAME

(30) Foreign Application Priority Data

Oct. 15, 2001 (JP) 2001-315155

Publication Classification

(51) Int. Cl. H04N 9/47  
(52) U.S. Cl. 348/148

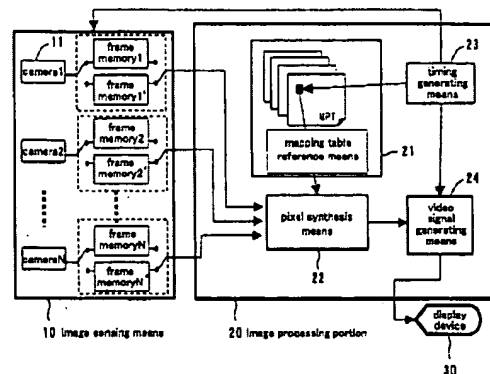
(57) ABSTRACT

The invention provides a vehicle surroundings monitoring system for synthesizing and displaying images captured by a plurality of cameras to provide images that, near the border between partial images, are more accurate and more readily understood by the user than has been the case conventionally. In the synthesized image, a partial image captured by a first camera and a partial image captured by a second camera are adjacent to one another at their border. Near this border, the capturing directions of the first and the second cameras both substantially match the direction of the border. Consequently, images of objects near the border extend along the border, and thus do not disappear on the synthesized image.

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(11) Appl. No.: 10271411

(22) Filed: Oct. 15, 2002



Details Text Image HTML Full

DOCUMENT-IDENTIFIER: US 20030058338 A1

TITLE: Method and apparatus for  
signal processor

----- KWIC -----

Summary of Invention Paragraph - BSTX (6):

[0005] As an apparatus which applies an image inputted from plural cameras to reproduce a sense of depth, for example, a vehicle rear monitoring apparatus of Publication No. Hei 3 (1991)-99952. In this v

Document ID	Kind	Code	Source	Issue D	Pages
1	US	2003023	US-PGP	2003122	25
2	US	2003021	US-PGP	2003112	18
3	US	2003021	US-PGP	2003111	39
4	US	2003019	US-PGP	2003102	19
5	US	2003017	US-PGP	2003092	14
6	US	2003015	US-PGP	2003082	13
7	US	2003014	US-PGP	2003073	39
8	US	2003013	US-PGP	2003072	17
9	US	2003013	US-PGP	2003071	28
10	US	2003013	US-PGP	2003071	7
11	US	2003010	US-PGP	2003061	28
12	US	2003010	US-PGP	2003061	35
13	US	2003010	US-PGP	2003052	9
14	US	2003009	US-PGP	2003052	8
15	US	2003008	US-PGP	2003050	36
16	US	2003007	US-PGP	2003042	67
17	US	2003006	US-PGP	2003040	18
18	US	2003005	US-PGP	2003032	16



(19) United States  
(12) Patent Application Publication (10) Pub. No.: US 2003/0058338 A1  
Kawachi et al. (43) Pub. Date: Mar. 27, 2003

(54) METHOD AND APPARATUS FOR MONITORING VEHICLE REAR, AND SIGNAL PROCESSOR (50) Foreign Application Priority Data  
Sep. 26, 2001 (JP) 2001-293520

(75) Inventors: Ryota Kawachi, Tokyo (JP); Hirotsugu Iwano, Tokyo (JP); Naoyuki Sano, Tokyo (JP); Taro Oishi, Tokyo (JP)  
(51) Int. Cl. H04N 7/18  
(52) U.S. Cl. 348/148

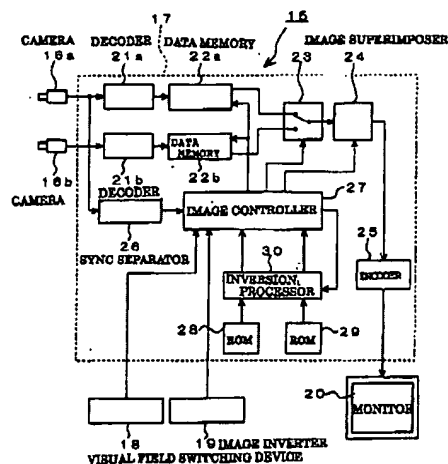
Correspondence Address:  
MORGAN LEWIS & BOKIUS LLP  
1111 PENNSYLVANIA AVENUE NW  
WASHINGTON, DC 20004 (US)

(73) Assignee: Clarion Co., Ltd.

(21) Appl. No.: 10/253,526

(22) Filed: Sep. 25, 2002

**ABSTRACT**  
Disclosed is a method for monitoring a vehicle rear which permits a user to grasp the position of the vehicle concerned easily without a sense of incongruity even in the case where plural display modes on a monitor are provided and switched from one to another.  
The vehicle rear monitoring method comprises displaying a vehicle on one side of a monitor and displaying a rear image of the vehicle on an opposite side of the monitor, and displaying the vehicle on the opposite side of the monitor and displaying the rear image of the vehicle on the one side of the monitor, and switching from said one display to said other display on the monitor.



DOCUMENT-IDENTIFIER: US 20030021490 A1  
TITLE: Monitoring system

----- KWIC -----

Pre-Grant Publication Document Identifier - DI  
US 20030021490 A1

Summary of Invention Paragraph - BSTX (2):  
[0001] The present invention relates to an  
generate a synthesized image by using camera i  
of

	Document I	Kind Code	Source	Issue D	Page
4	US 2003019		US-PGP	2003102	19
5	US 2003017		US-PGP	2003092	14
6	US 2003015		US-PGP	2003082	13
7	US 2003014		US-PGP	2003073	39
8	US 2003013		US-PGP	2003072	17
9	US 2003013		US-PGP	2003071	28
10	US 2003013		US-PGP	2003071	7
11	US 2003010		US-PGP	2003061	28
12	US 2003010		US-PGP	2003061	35
13	US 2003010		US-PGP	2003052	9
14	US 2003009		US-PGP	2003052	8
15	US 2003008		US-PGP	2003050	36
16	US 2003007		US-PGP	2003042	67
17	US 2003006		US-PGP	2003040	18
18	US 2003005		US-PGP	2003032	16
19	US 2003003		US-PGP	2003022	12
20	US 2003002		US-PGP	2003020	19
21	US 2003002		US-PGP	2003013	34

(19) United States  
(12) Patent Application Publication (10) Pub. No.: US 2003/0021490 A1  
Okamoto et al. (e) Pub. Date: Jan. 30, 2003

(34) MONITORING SYSTEM (30) Foreign Application Priority Data  
Jul. 19, 2000 (JP) 2000-219513

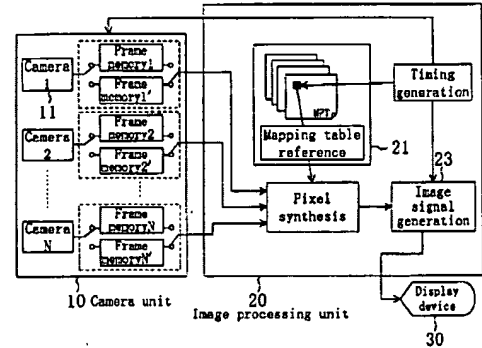
(70) Inventors: Shinsuke Okamoto, Osaka (JP);  
Masamichi Nakagawa, Osaka (JP);  
Kenji Nobe, Osaka (JP); Atsushi  
Moriwaka, Nara (JP); Nobuhiko  
Yasui, Osaka (JP); Akira Ishida, Osaka  
(JP); Atsushi Dohta, Osaka (JP);  
Takeshi Yoshida, Osaka (JP)

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BLOOMFIELD HILLS, MI 48303 (US)

(21) Appl. No.: 10/088,606  
(22) PCT Filed: Jul. 19, 2001  
(40) PCT No.: PCT/JP01/06313

Publication Classification  
(51) Int. Cl. G06K 9/00, G06K 9/36  
(52) U.S. Cl. 362/284; 362/104

(57) ABSTRACT  
For supporting a complicated driving operation, a synthe-  
sized image by using which a driver can drive with a sense  
of security is presented to the driver. Camera images of  
cameras installed on a vehicle are used so that an image with  
a lateral visual field of 180 degrees in the rear of the vehicle  
can be displayed in the form of a mirror image. Also, (a) the  
loci (41) of the vehicle obtained by assuming a reverse  
operation are overlapped with the image to be displayed.  
Furthermore, (b) a far area (42) is enlarged to be displayed  
in a sub-window (44), or (c) auxiliary lines (45, 46 and 47)  
indicating distances from the vehicle are overlapped with the  
image to be displayed.



DOCUMENT-IDENTIFIER: US 20030011597 A1

TITLE: Viewpoint converting a  
and  
vehicular image process  
utilizing the viewpoint  
and program

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Pre-Grant Publication Document Identifier - DI  
US 20030011597 A1

Details Text Image HTML KWIC

	Document I	Kind Code	Source	Issue D	Page
5	US 2003017		US-PGP	2003092	14
6	US 2003015		US-PGP	2003082	13
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8	US 2003013		US-PGP	2003072	17
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15	US 2003008		US-PGP	2003050	36
16	US 2003007		US-PGP	2003042	67
17	US 2003006		US-PGP	2003040	18
18	US 2003005		US-PGP	2003032	16
19	US 2003003		US-PGP	2003022	12
20	US 2003002		US-PGP	2003020	19
21	US 2003002		US-PGP	2003013	34
22	US 2003001		US-PGP	2003011	18

Details Text Image HTML Full



US 20030011597A1

(19) United States  
(12) Patent Application Publication (19) Pub. No.: US 2003/0011597 A1  
Otsunmi (43) Pub. Date: Jan. 16, 2003

(54) VIEWPOINT CONVERTING APPARATUS, METHOD, AND PROGRAM AND VEHICULAR IMAGE PROCESSING APPARATUS AND METHOD UTILIZING THE VIEWPOINT CONVERTING APPARATUS, METHOD, AND PROGRAM  
(51) Int. Cl.<sup>7</sup> G06T 15/20  
(52) U.S. Cl. 348/427

Publication Classification

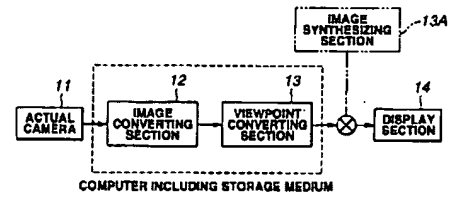
(75) Inventor: Ken Otsunmi, Tokyo (JP)  
(57) ABSTRACT

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McDERMOTT, WILL & EMERY  
602 13th Street, N.W.  
Washington, DC 20005-3094 (US)

(73) Assignee: Nissan Motor Co., Ltd.

(21) Appl. No.: 10/193,284  
(22) Filed: Jul. 12, 2002  
(30) Foreign Application Priority Data  
Jul. 12, 2001 (JP) 2001-211793  
Mar. 22, 2002 (JP) 2002-080043

In viewpoint converting apparatus, method, and program, and vehicular image processing apparatus and method utilizing the view point converting apparatus, method, and program, an image conversion is performed for an image photographed by a photographing section with an angle of outgoing radiation of a light ray toward an internal of the photographing section set to be narrower than an angle of incidence of another light ray from an external to the photographing section and a viewpoint conversion is performed for the viewpoints converted image by an image converting section.



Details Text Image HTML Full

DOCUMENT-IDENTIFIER: US 20020196340 A1

TITLE: Image synthesis display  
vehicle camera

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## Abstract Paragraph - ABTX (1):

When multiple cameras (CAM1) to (CAM8) for local vehicle are mounted on the vehicle, and when c

synthesized to display a synthesized image on (16), the pixel data for the camera images cor

Document I	Kind Code	Source	Issue D	Pages
7	US 2003014	US-PGP 2003073	39	
8	US 2003013	US-PGP 2003072	17	
9	US 2003013	US-PGP 2003071	28	
10	US 2003013	US-PGP 2003071	7	
11	US 2003010	US-PGP 2003061	28	
12	US 2003010	US-PGP 2003061	35	
13	US 2003010	US-PGP 2003052	9	
14	US 2003009	US-PGP 2003052	8	
15	US 2003008	US-PGP 2003050	36	
16	US 2003007	US-PGP 2003042	67	
17	US 2003006	US-PGP 2003040	18	
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19	US 2003003	US-PGP 2003022	12	
20	US 2003002	US-PGP 2003020	19	
21	US 2003002	US-PGP 2003013	34	
22	US 2003001	US-PGP 2003011	18	
23	US 2003000	US-PGP 2003010	16	
24	US 2002019	US-PGP 2002122	14	



US 20020196340A1

(18) United States

(12) Patent Application Publication

(10) Pub. No.: US 2002/0196340 A1

Kato et al.

(43) Pub. Date:

Dec. 26, 2002

(34) IMAGE SYNTHESIS DISPLAY METHOD  
AND APPARATUS FOR VEHICLE CAMERA

(30) Foreign Application Priority Data

Apr. 24, 2001 (JP) P. 2001-125013

(73) Inventors: Koichi Kato, Hamamatsu-shi (JP);  
Masato Suzuki, Hamamatsu-shi (JP);  
Yukio Fujita, Katsuyuki-shi (JP);  
Yukio Hiruma, Yokohama-shi (JP)

Publication Classification

(51) Int. Cl.<sup>7</sup> H04N 7/18; H04N 9/47  
(52) U.S. Cl. 348/148; 348/564; 362/104

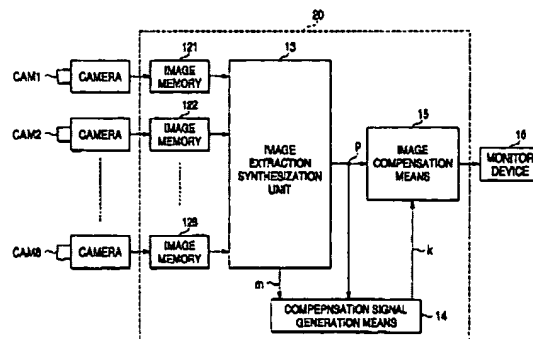
(57) ABSTRACT

When multiple cameras (CAM1) to (CAM8) for shooting the periphery of a local vehicle are mounted on the vehicle, and when obtained camera images are to be synthesized to display a synthesized image on the screen of a display device (16), the pixel data for the camera images constituting the synthesized image are compensated for, so that differences in the pixel data for adjacent camera images is reduced. For example, the pixel data are corrected so their values equal the average values of the pixel data for the adjacent camera images. Therefore, an easily viewed image, produced by synthesizing the images obtained by the multiple vehicle cameras, can be displayed on the monitor device (16).

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SUITE 1200  
CLEVELAND, OH 44114-1484 (US)(73) Assignee: Matsushita Electric Industrial Co.,  
Ltd.

(21) Appl. No.: 10/123,879

(22) Filed: Apr. 23, 2002



Full

DOCUMENT-IDENTIFIER: US 20020191078 A1

TITLE: Monitoring system

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Pre-Grant Publication Document Identifier - DI  
US 20020191078 A1

Detail Description Paragraph - DETX (3):

[0031] FIG. 1 is a block diagram for showing monitoring system of this invention. In the monitoring system

	Document I	Kind Code	Source	Issue D	Pages
9	US 2003013		US-PGP	2003071	28
10	US 2003013		US-PGP	2003071	7
11	US 2003010		US-PGP	2003061	28
12	US 2003010		US-PGP	2003061	35
13	US 2003010		US-PGP	2003052	9
14	US 2003009		US-PGP	2003052	8
15	US 2003008		US-PGP	2003050	36
16	US 2003007		US-PGP	2003042	67
17	US 2003006		US-PGP	2003040	18
18	US 2003005		US-PGP	2003032	16
19	US 2003003		US-PGP	2003022	12
20	US 2003002		US-PGP	2003020	19
21	US 2003002		US-PGP	2003013	34
22	US 2003001		US-PGP	2003011	18
23	US 2003000		US-PGP	2003010	16
24	US 2002019		US-PGP	2002122	14
25	US 2002019		US-PGP	2002121	13
26	US 2002019		US-PGP	2002121	17



US 20020191078A1

(19) United States

(12) Patent Application Publication  
Okamoto et al.(10) Pub. No.: US 2002/0191078 A1  
(43) Pub. Date: Dec. 19, 2002

(54) MONITORING SYSTEM

Publication Classification

(76) Inventors: Shunroku Okamoto, Kanagawa (JP);  
Masamichi Nakagawa, Osaka (JP);  
Takeshi Yoshida, Osaka (JP); Atsushi  
Itoaka, Osaka (JP); Atsushi Morioka,  
Nara (JP)(51) Int. Cl.<sup>7</sup> H04N 7/18  
(52) U.S. Cl. 348/148

(57) ABSTRACT

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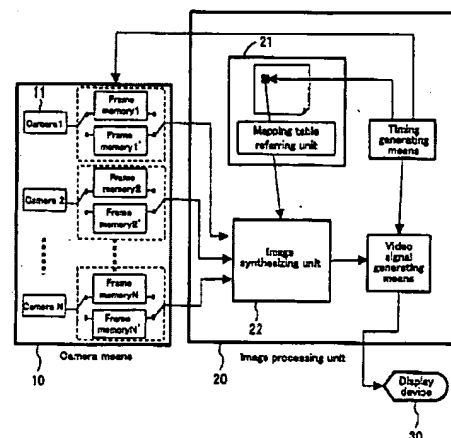
(21) Appl. No.: 10/173,316

(22) Filed: Jun. 17, 2002

(30) Foreign Application Priority Data

Jun. 18, 2001 (JP) 2001-182,741

A camera for taking a state behind a vehicle is installed in a position laterally shifted from the rear center of the vehicle. An image processing unit generates a rear image from a camera image by shifting exactly a rectangular area of the camera image so that a vertical center line thereof can substantially accord with the center line along the lengthwise direction of the vehicle. Furthermore, processing for correcting lens distortion may be performed. As a result, when the vehicle is moved straight backward, an object present on the center line of the vehicle moves vertically in substantially the center of the screen, so that a user can be prevented from having an odd feeling to see the image.



DOCUMENT-IDENTIFIER: US 20020149673 A1

TITLE: Image display method and system

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Pre-Grant Publication Document Identifier - DI  
US 20020149673 A1Detail Description Paragraph - DETX (3):  
[0034] FIG. 1 shows a relation between a vehicle camera

	Document I	Kind Code	Source	Issue D	Page
11	US 2003010		US-PGP	2003061	28
12	US 2003010		US-PGP	2003061	35
13	US 2003010		US-PGP	2003052	9
14	US 2003009		US-PGP	2003052	8
15	US 2003008		US-PGP	2003050	36
16	US 2003007		US-PGP	2003042	67
17	US 2003006		US-PGP	2003040	18
18	US 2003005		US-PGP	2003032	16
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20	US 2003002		US-PGP	2003020	19
21	US 2003002		US-PGP	2003013	34
22	US 2003001		US-PGP	2003011	18
23	US 2003000		US-PGP	2003010	16
24	US 2002019		US-PGP	2002122	14
25	US 2002019		US-PGP	2002121	13
26	US 2002019		US-PGP	2002121	17
27	US 2002017		US-PGP	2002112	11
28	US 2002014		US-PGP	2002101	17

Details Text Image HTML Full

(19) United States  
(12) Patent Application Publication (10) Pub. No.: US 2002/0149673 A1  
Hirama et al. (43) Pub. Date: Oct. 17, 2002

(54) IMAGE DISPLAY METHOD AND APPARATUS FOR REARVIEW SYSTEM

(50) Foreign Application Priority Data

Mar. 19, 2001 (JP) P. 2001-095360  
Mar. 19, 2002 (JP) P. 2002-076467

(75) Inventors: Yuichi Hirama, Yokohama-shi (JP);  
Satoru Masuda, Yokohama-shi (JP);  
Hidetoshi Mimura, Yokohama-shi (JP);  
Kazuo Miyama, Yokohama-shi (JP);  
Masahiro Takata, Zama-shi (JP)

Publication Classification

(51) Int. Cl. B60N 7/18  
(52) U.S. Cl. 348/118; 348/139; 348/140

Correspondence Address:  
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SUITE 1200  
CLEVELAND, OH 44114-1484 (US)

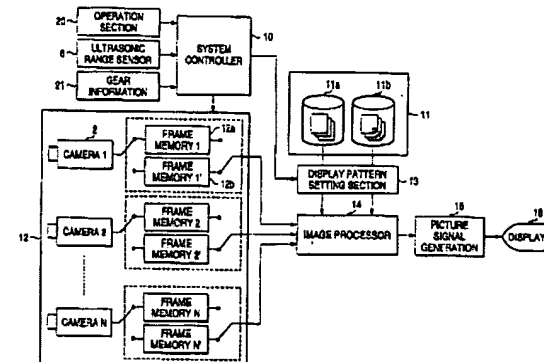
(73) Assignee: Matsushita Electric Industrial Co., Ltd.

(21) Appl. No.: 10/105,375

(22) Filed: Mar. 28, 2002

# ABSTRACT

An image display method for a rearview camera for displaying an image shot by a rearview camera mounted on a vehicle on a screen that can be viewed from a driver's seat, the method includes the step of displaying an auxiliary line image indicating the straight rear direction of the vehicle superimposed on the image shot by the vehicle on the screen. When the vehicle has approached the trailer within a predetermined range, an image from the rearview camera is converted to an image from a virtual overhead viewpoint then displayed on the screen. The driver easily back the vehicle to bring the hitch in the blind spot at the rear of the vehicle to coincide with a coupling member on the trailer while watching the screen display.



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DOCUMENT-IDENTIFIER: US 20020094110 A1  
TITLE: Driving assistance app

----- KWIC -----

Abstract Paragraph - ABTX (1):  
A driving assistance apparatus includes: ca  
observing point converting unit; an image synt  
image information supplied from this virtual c  
an obstacle sensing unit such as an ultrasonic  
millimeter-wave radar; a safety area predicti  
superposing unit. Then, the safety area predi

	Document I	Kind Code	Source	Issue D	Pages
14	US 2003009		US-PGP	2003052	8
15	US 2003008		US-PGP	2003050	36
16	US 2003007		US-PGP	2003042	67
17	US 2003006		US-PGP	2003040	18
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22	US 2003001		US-PGP	2003011	18
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27	US 2002017		US-PGP	2002112	11
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31	US 2002009		US-PGP	2002071	15

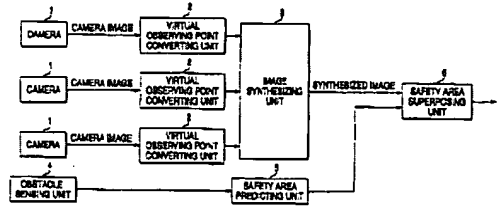
(10) United States  
(12) Patent Application Publication (10) Pub. No.: US 2002/0094110 A1  
Okada et al. (10) Pub. Date: Jul. 18, 2002

(54) DRIVING ASSISTANCE APPARATUS (52) U.S. Cl. 362/104; 348/113; 362/103;  
(76) Inventors: Tetsuaki Okada, Yoshitaka-ichi (JP); Kazufumi Mizusawa, Kawanishi (JP) 362/284

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(21) Appl. No.: 09/993,727  
(22) Filed: Nov. 6, 2001  
(30) Foreign Application Priority Data  
May 9, 2000 (JP) P. 2000-136044  
Publication Classification  
(51) Int. Cl. G06K 8/00

ABSTRACT  
A driving assistance apparatus includes: cameras a plurality of virtual observing points converting unit; an image synthesizing unit for synthesizing image information supplied from this virtual observing point converting unit, an obstacle sensing unit such as an ultrasonic-wave sensor and a millimeter-wave radar; a safety area predicting unit; and a safety area superposing unit. Then, the safety area predicting unit predicts such a safety area where an obstacle is not present based upon both a distance "d1" and an approximate direction, which are obtained from the obstacle sensing unit. Also, the safety area superposing unit superposes the safety area predicted by the safety area predicting unit on an image synthesized by way of cameras to display the synthesized image superposed with the safety area.



DOCUMENT-IDENTIFIER: US 20020005779 A1TITLE: Driving operation assi

----- KWIC -----

Pre-Grant Publication Document Identifier - DI  
US 20020005779 A1Summary of Invention Paragraph - BSTX (21):  
[0019] It is preferred that the image proce  
surrounding condition image by synthesizing in

Details Text Image HTML KWIC

	Document I	Kind Code	Source	Issue D	Page
19	US 2003003		US-PGP	2003022	12
20	US 2003002		US-PGP	2003020	19
21	US 2003002		US-PGP	2003013	34
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(19) United States

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AND SYSTEM

Publication Classification

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(52) U.S. Cl. 340/434; 340/435; 340/438;  
346/742; 346/743Correspondence Address:  
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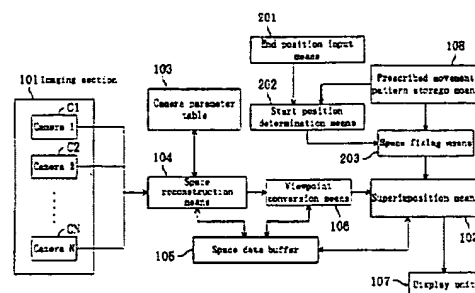
(21) Appl. No.: 09/826,797

(22) Filed: Apr. 5, 2001

(30) Foreign Application Priority Data  
Apr. 5, 2000 (JP) 2000-109037

## (57) ABSTRACT

In a driving operation assisting technique, the burden on a user is reduced. The user is allowed to specify, on an image representing the surrounding conditions around a vehicle, the end position of the vehicle at the end of a predetermined driving operation by using, for example, a pointer. A driving operation assisting system obtains the start position of the driving operation based on a prescribed movement pattern representing the movement of the vehicle in the driving operation, and superimposes the end position on the display image.



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DOCUMENT-IDENTIFIER: US 20010012985 A1  
TITLE: Calibration system, ta  
method

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Pre-Grant Publication Document Identifier - D  
US 20010012985 A1

Summary of Invention Paragraph - BSTX (4):  
[0003] FIG. 23 is a block diagram showing t  
vehicle surrounding monitoring system (Japanes

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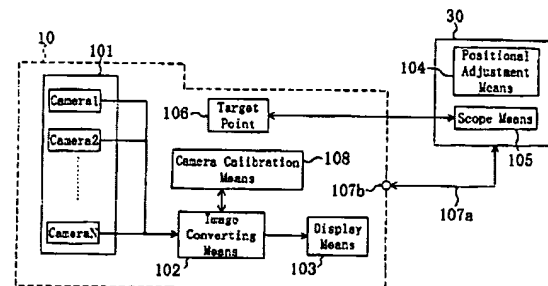
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US 20010012985A1

- (19) United States  
(12) Patent Application Publication (10) Pub. No.: US 2001/0012985 A1  
Okamoto et al. (43) Pub. Date: Aug. 9, 2001
- (34) CALIBRATION SYSTEM, TARGET APPARATUS AND CALIBRATION METHOD (30) Foreign Application Priority Data  
Jan. 27, 2000 (JP) 2000-015409
- (76) Inventors: Shinsuke Okamoto, Osaka (JP); Masamichi Nakagawa, Osaka (JP); Atsushi Morimura, Nara (JP)
- Correspondence Address: Harries, Dickey & Pierce, P.L.C. P. O. Box 429 Bloomfield Hills, MI 48303 (US)
- (11) Appl. No.: 09/770,638  
(22) Filed: Jan. 25, 2001
- (51) Int. Cl. G01C 17/38  
(52) U.S. Cl. 702/94; 702/95
- (57) ABSTRACT  
Simple calibration of a camera mounted on a mobile object is implemented. With a joint means, a target apparatus for calibration is physically fixed to the mobile object having a camera mounted thereon. The positional relation between the vehicle and the target apparatus is finely adjusted while visually confirming a target point on the vehicle through a scope means.



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- L2: (3438) camera\$3 same (running\$3 or moving\$3) same (car or truck or vehicle)
- L3: (66) 1 and 2
- L4: (29683) virtual\$3 same view\$3
- L5: (166) 4 and 2
- L6: (10) 2 same 4
- L7: (12837) virtual\$3 same (position\$3 or coordinate\$3 or location\$3 or point\$3) same
- L8: (107) 2 and 7
- L9: (1730) virtual\$3 same (position\$3 or coordinate\$3 or location\$3 or point\$3) same
- L10: (214475) (running\$3 or moving\$3) same (car or truck or vehicle or van or bus)
- L11: (152) 9 and 10
- L12: (15) 9 same 10
- L13: (122) virtual\$3 same (position\$3 or coordinate\$3 or location\$3 or point\$3) same
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- L18: (13) 15 and 16 and 17
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- L21: (12) 16 and 20
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22 and 24

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1	<input type="checkbox"/>	<input type="checkbox"/>	US 2003061286	20030619	21	Method and apparatus for	375/240.12	375/240.25		Chen, Sherman	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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